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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,077	11/19/2007	Fokko Pieter Wieringa	254074	9848
23460 7590 05/30/2012 LEYDIG VOIT & MAYER, LTD TWO PRUDENTIAL PLAZA, SUITE 4900 180 NORTH STETSON AVENUE CHICAGO, IL 60601-6731			EXAMINER JOHNSTON, PHILLIP A	
			ART UNIT 2881	PAPER NUMBER
			NOTIFICATION DATE 05/30/2012	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Chgpatent@leydig.com

Office Action Summary

Application No.

10/598,077

Applicant(s)

WIERINGA ET AL.

Examiner

PHILLIP A. JOHNSTON

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2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2012.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-8 and 10-16 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-8 and 10-16 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 19 November 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-302)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

Detailed Action

1. This Office Action is submitted in response to the amendment filed 4-24-2012, wherein claim 9 has been canceled and claims 1, 6, 10, 12 and 16 have been amended. Claims 1-8 and 10-16 are now pending.

Response to Arguments

2. Applicant's arguments filed 4-24-2012 have been fully considered but they are not persuasive.

Argument 1

The Applicant argues at page 8 of the remarks that, So's imaging mode (based on fluorescent light induced in the imaged object) thus differs from the claimed invention which relies upon image information (edges/gradients) generated from scattered infrared light to image embedded structures under a tissue surface.

In response to applicant argument that the So reference fails to show a certain feature of applicant's invention, it is noted that the feature upon which applicant relies (i.e., image information (edges/gradients) generated from scattered infrared light) is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed Cir 1993).

Argument 2

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One skilled in the art would not have any reason to modify So, in view of Silber, to render the claimed invention. For one, Silber does not even describe the necessary modifications. Moreover, Silber could be applied to So to possibly improve removal of artifacts from an image created by So's fluorescence image. However, such modification still does not describe the way in which the claimed invention obtains an image of buried structure in an object by discarding edges detected in the (infrared) image containing an image of a buried structure if such edges are also detected in the visual image.

The examiner disagrees, because So discloses an image segmentation routine that uses thresholding where the image is segmented into different components on the basis of the grayscale intensity at each pixel at [0078]. So also rejects or discards out of focus light data, in order to improve image resolution.

So goes on to teach removing pixels to enhance image resolution by comparing two images at two different wavelengths over the wavelength range between 650 and 1200nm, which one of ordinary skill recognizes as including infrared and visual light. See paragraphs [0072]; [0125] and [0126]

Silber provides the "edge" teaching missing in So at [0068], by stating that edges are defined in terms of pixels that are adjacent to regions where gray scale intensity changes by a preset value. See also paragraphs [0095]; [0099]; [0102] and [0103].

Both So and Silber use an image processing algorithm that is sensitive to localized changes in gray scale intensity of image pixels.

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Therefore, So would be motivated to use the edge detection of Silber, in order to further enhance images.

Therefore in light of the above, the examiner has concluded that the combination of So and Silber discloses the claimed invention.

3. The rejection of claims 1-8 and 10-16 are maintained.

4. All claims stand finally rejected.

Claims Rejection – 35 U.S.C. 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat Pub No 2005/0036667 to So, in view of Silber US Pat Pub No 2002/0181762.

4. Regarding claim 16, So discloses an apparatus for imaging sub-cutaneous objects (buried beneath the skins surface). See [0036]. The apparatus includes a light source for imaging the object at different selectable wavelengths, where the beam of light is concentrated by focusing (a bounded source); and includes a CCD or CMOS camera [0042], as well as an image processing computer [0067]. The processor is used to perform 3D image segmentation, where individual images are combined or reconstructed into a single image based upon grayscale intensity [0052] and [0078].

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So also discloses scanning the sample surface at different speeds to obtain spatial information to determine; for example, motion of objects in fluids by comparing one image to a previous image in time [0043] and [0051]-[0053].

So further discloses an image segmentation routine that uses thresholding where the image is segmented into different components on the basis of the grayscale intensity at each pixel at [0078]. So also rejects or discards out of focus light data, in order to improve image resolution.

So goes on to teach removing pixels to enhance image resolution by comparing two images at two different wavelengths over the wavelength range between 650 and 1200nm, which one of ordinary skill recognizes as including infrared and visual light. See paragraphs [0072]; [0125] and [0126]

So fails to explicitly teach a processing device that, provides a gradient analysis of an image in order to detect the edges of a buried structure; and after comparing the gradient analysis of two images, discards the edges found in both images and combines the two images to define the edges of the buried structure.

Silber discloses using known edge detection means while performing gradient analysis that includes criteria for removal of selected edge data in a plurality of images in order to obtain a composite image and a composite image edge map, which defines the edges of the object in the composite image [0095]-[0102].

Silber also provides the “edge” teaching missing in So at [0068], by stating that edges are defined in terms of pixels that are adjacent to regions where gray scale

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intensity changes by a preset value. See also paragraphs [0095]; [0099]; [0102] and [0103].

Silber modifies So to provide a technique for identifying edges in an image that is sensitive to and indicative of the degree to which an edge is focused in an image in order to obtain the best focus conditions of the edges of an object in an image [0069]-[0076].

Both So and Silber use an image processing algorithm that is sensitive to localized changes in gray scale intensity of image pixels.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that So would use the image processing technique of Silber to reduce out-of-focus artifacts and identify well-focused edges or boundaries in the source images during construction of a composite image, thereby improving image resolution by providing a high-resolution, well-focused image of a portion of a three-dimensional object while allowing the user to clearly observe or record the surrounding area. [0012].

5. Regarding claims 1-8 and 10-15, the combination of So and Silber discloses the apparatus used to perform all the steps of these method claims to obtain an image of structures buried beneath the surface of an object, as described above regarding claim 16; including the use of infrared light [0102] and scanning the sample surface using different speeds and patterns to obtain spatial information for detecting motion of objects in fluids by comparing one image to a previous image in time [0043] and [0051]-[0053], which one of ordinary skill would expect to include pulse, heartbeat and/or respiratory analysis.

Conclusion

5. The Amendment filed on 4-24-2012 has been considered but is ineffective to overcome the references cited in the Office Action mailed 10-24-2011.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Robert Kim can be reached at (571) 272-2293. The fax phone number for the organization where the application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ

May 21, 2012

/PHILLIP A JOHNSTON/

Primary Examiner, Art Unit 2881